

# Claims

- [c1] A method of nondestructive structural and functional integrity monitoring of a subject that do apply any type of energy to the said subject or an aggregate said body is a part of, where in examples of such energy are electro-magnetic waves, voltages, currents, deformations, acoustic waves, temperature, thermal waves. The method only uses information obtained through a set of mounted sensor(s) that measure physical properties of said subject, wherein information from sensor(s) is analyzed by automatic means to determine presence of automatically defined characteristics specific to the subject. Wherein term functional integrity monitoring also stands for malfunction detection and prediction.
- [c2] An apparatus comprising digital processing component capable of implementing method of claim 1 and plurality of sensors providing measurements to said processor. Wherein said plurality may be formed by just one sensor.
- [c3] A component or an assembly that has apparatus of claim 2 built-in.
- [c4] An assembly containing more than one object of claim 3,

where in the apparatuses of these objects are linked to form a single network or multiple networks.

- [c5] A method of claim 1 that provides data that employed to report unusual usage events or usage patterns.
- [c6] An implementation of the method of claim 1 that utilizes public informational and or signal networks to transmit and or receive information to/from remote location.
- [c7] An object that utilizes method of claim 1 to forecast recommended time of own replacement.
- [c8] An implementation of claim 6 wherein said remote location is in direct proximity of the subject.
- [c9] An implementation of the method of claim 1 where in single physical node is used to process data from multiple independent subjects.
- [c10] An apparatus of claim 2 that uses autonomous energy source.
- [c11] An apparatus of claim 4 that uses network as an energy source.